

March 1972

INITIAL RESULTS OF AN ADMINISTRATIVE STUDY OF
DWARF MISTLETOE SURVEY METHODS

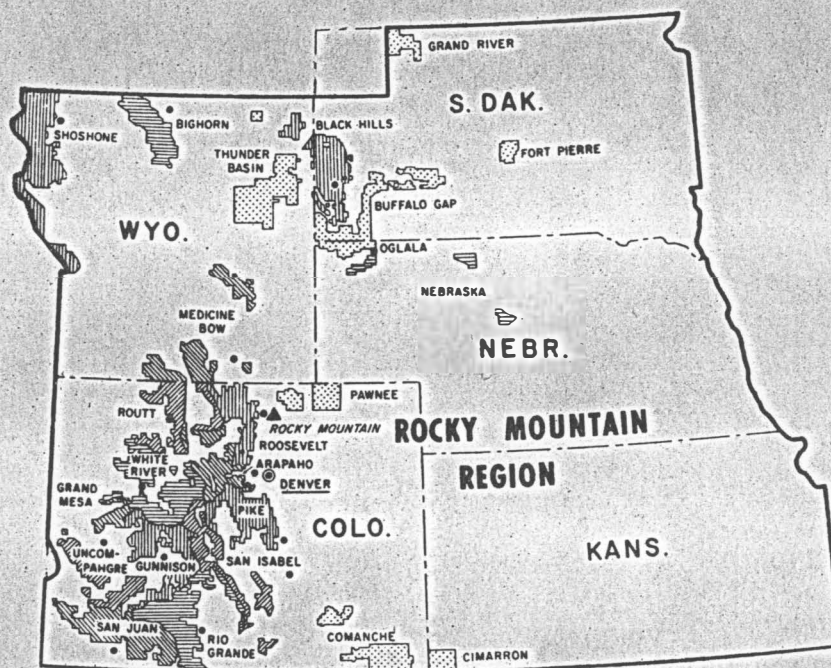
Donald H. Brown

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TIMBER MANAGEMENT



U.S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
Division of Timber Management
Region 2
Denver, Colorado

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Dwarf mistletoe-infected trees usually occur in distinct groups or centers of different sizes and shapes scattered through a stand. In Region 2, we have thousands of acres of even-aged lodgepole pine which is now, or will soon be, in need of either precommercial or commercial thinning. Dwarf mistletoe is present on approximately half of this acreage. When the land manager discovers the presence of dwarf mistletoe in a proposed thinning project, one thing he needs to know is the projected effect of the disease on yield in order to decide for or against the project. The recent publication "Simulating Yields of Managed, Dwarf Mistletoe-Infested Lodgepole Pine Stands" by C. A. Myers, F. G. Hawksworth, and J. L. Stewart describes a program that can provide the needed information.

In order to utilize the program, a sampling scheme or survey is needed to collect the required data at a desired level of accuracy. Survey data is needed, not only to utilize a simulated yield program but to determine feasibility and priority of proposed sanitation thinnings. This is also true for other dwarf mistletoes for which simulated yield programs have not been developed. Probably the same survey can also be used to gather data for post-control evaluations of sanitation thinning projects.

Our records show systematic dwarf mistletoe surveys were started by Forest Pest Control personnel in Region 2 in 1960. Studies of survey techniques were conducted by Jim Stewart, starting in 1965. In 1971, a 25-year-old, 40-acre stand of lodgepole in Silver Creek, North Park Ranger District, Routt National Forest, was selected for a systematic study of various survey methods. A survey of the stand in 1963 estimated 19 percent of the trees were infected with dwarf mistletoe. In 1964, the stand was selected for use as a test area for a complete silvicultural control effort. The thorough control effort resulted in many heavily thinned or clearcut patches which have since become adequately restocked. A 100-percent tree density and dwarf mistletoe incidence survey provided the data base for the comparative study of five survey methods. Only trees seven feet or more in height were included in any of the surveys.

The results of all six surveys are shown in table 1. The greatest amount of time was spent on the 3rd nearest tree method, as this survey method was also being field-tested in seven Ranger Districts during the summer of 1971. The 3rd nearest tree method was adapted

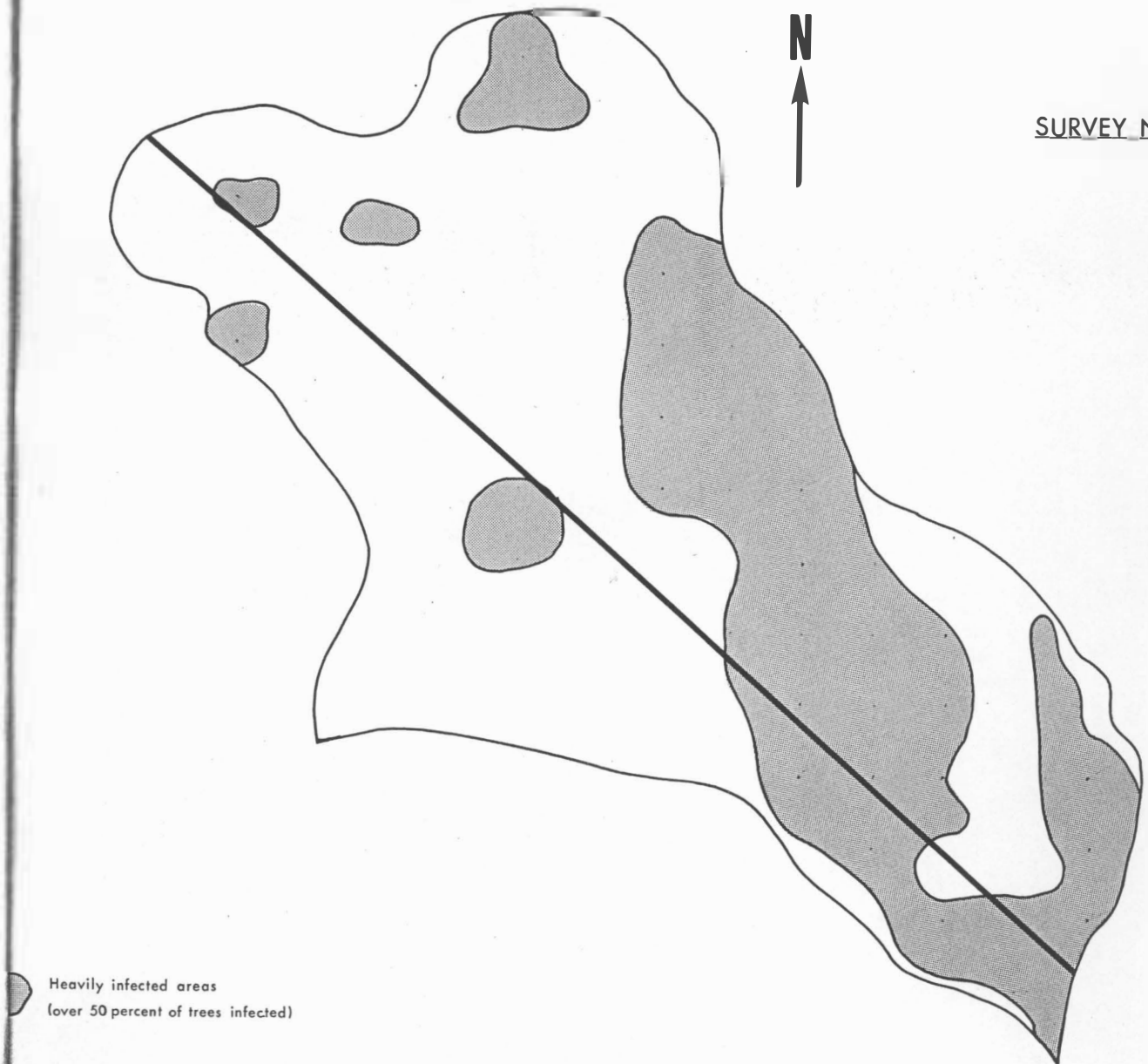
from work initiated by Jim Stewart and tested in Region 6, with statistical assistance from Jake Kovner, from the Rocky Mountain Forest and Range Experiment Station. Field crews were readily trained to use this method and seemed to like the technique. One advantage it has over a fixed-plot method is that a maximum of only 12 trees are examined at each sample point.

Additional studies of survey methods on a smaller scale and more surveys in proposed thinning areas are planned for the summer of 1972.

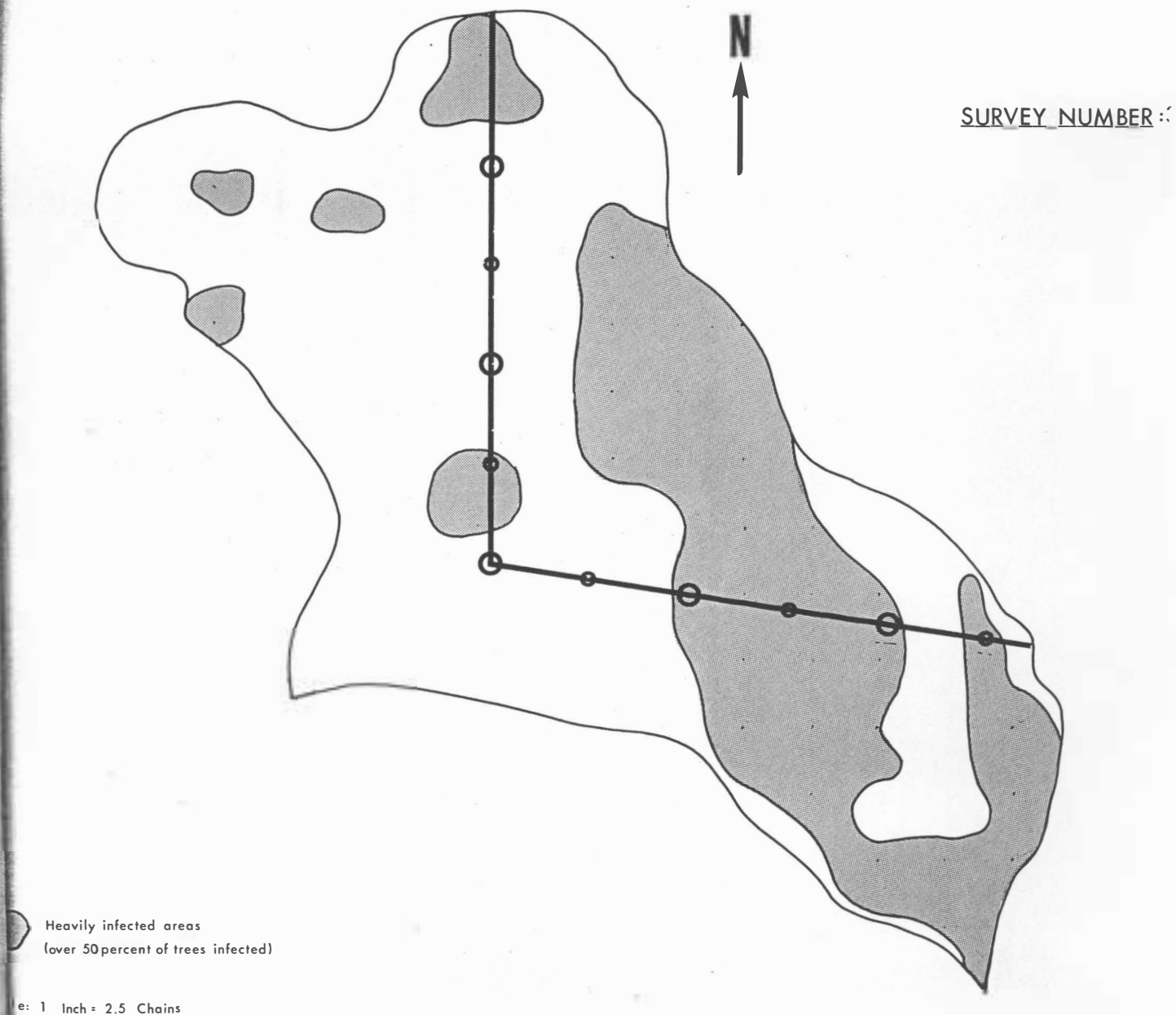
Table 1.--Dwarf mistletoe surveys Silver Creek, North Park Ranger
District. Routt National Forest, Colorado

Survey	Trees/Acre	Percent Infection	Man Hours
1. 100 percent survey	825	23	214
2. Tegethoff special (1/300 A plots)	980 + 205	39 + 9	2
3. Stage 2 - survey			
a. first 5 plots	780 + 310	38 + 13	--
b. second 5 plots	840 + 390	50 + 16	--
c. ten plots	810 + 235	44 + 12	12
4. 1970 2 percent survey	935 + 110	33 + 4	64
5. Region 1 incidence survey			
a. N-S transect	--	37 + 5	32
b. E-W transect	--	38 + 4	24
6. Third nearest tree			
a. 4 chains, third tree	780 + 30	48 + 7	} 40
b. 4 chains, all 3 trees	--	46	
c. 4 chains, first tree	--	48	
d. 2 chains, third tree	930 + 20	39 + 5	} 104
e. 2 chains, all 3 trees	--	37	
f. 2 chains, first tree	--	38	

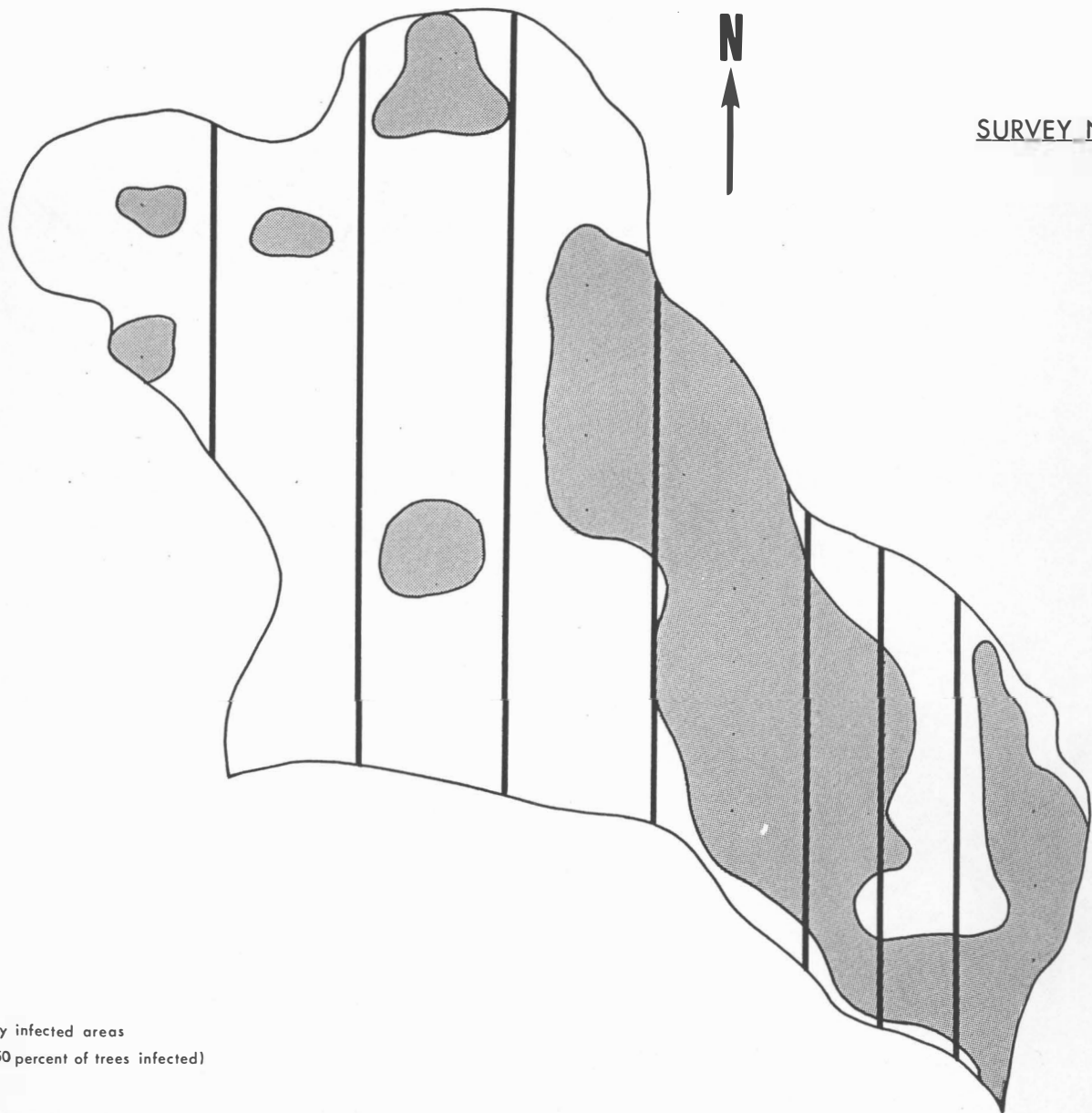
DWARF MISTLETOE SURVEY STUDY AREA ROUTT NATIONAL FOREST, COLORADO



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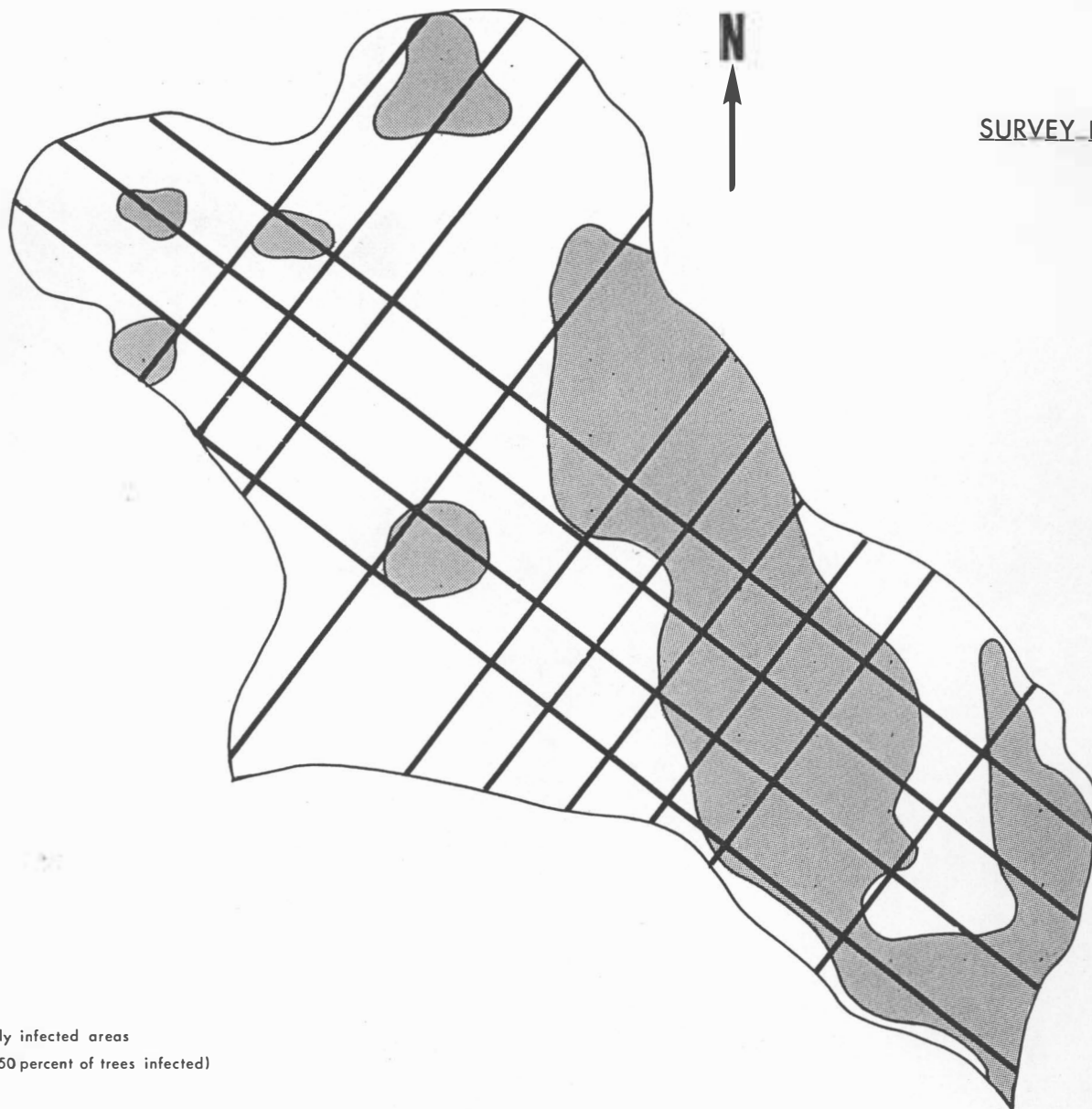
SURVEY NUMBER : 4


Heavily infected areas
(over 50 percent of trees infected)

Scale: 1 Inch = 2.5 Chains

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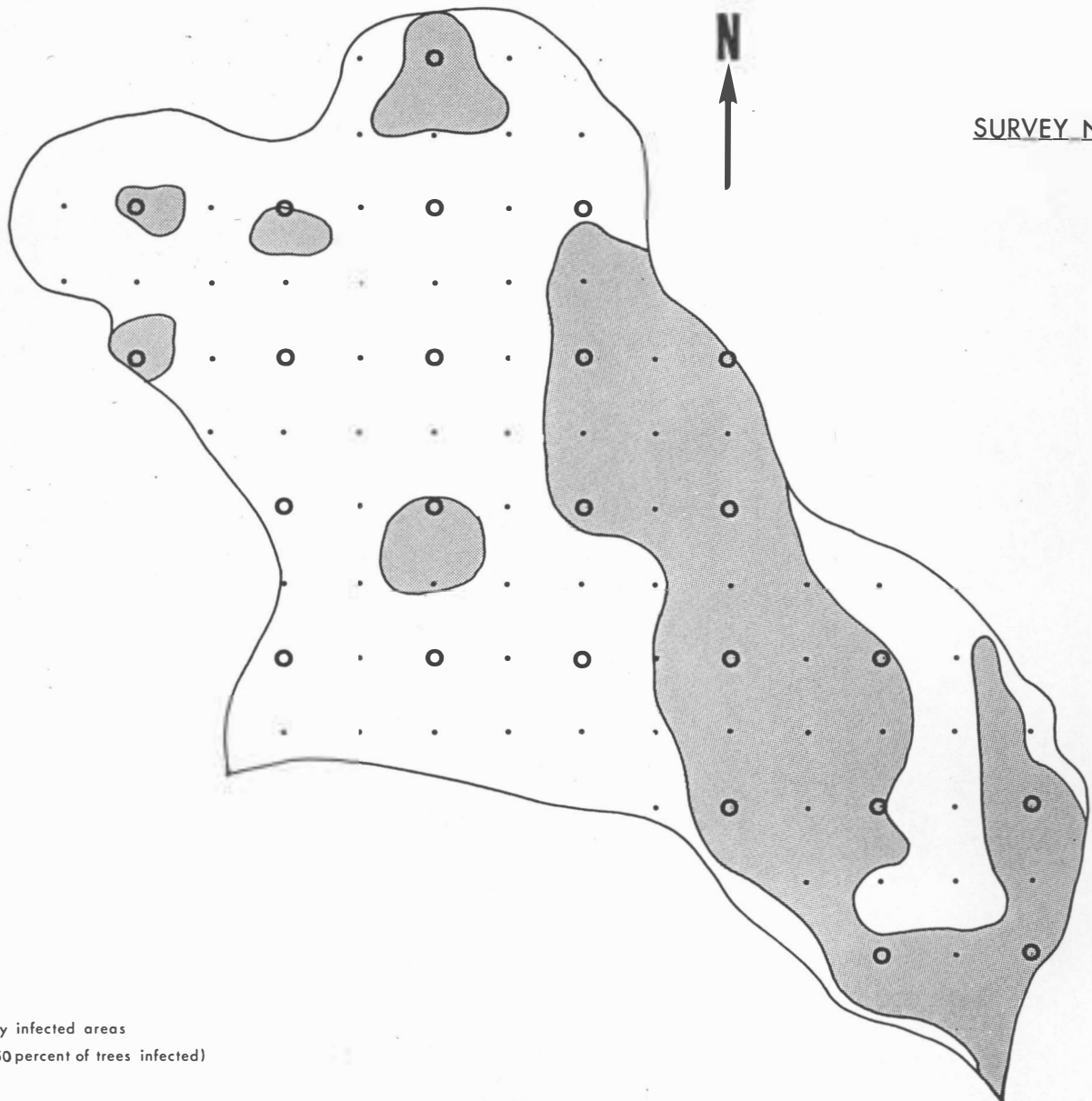



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